

# EPA Committed to Addressing Gulf Hypoxia

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## Abstract

This is an important conference and the "Dead Zone" in the Gulf of Mexico is an important issue. We're going to be committed to addressing it from the national level at EPA. There are a number of efforts underway at the national level that can play a role in clarifying the severity of the problem, developing strategies to counter it, and implementing those strategies. Just to cite a couple of examples in areas where I have been directly involved recently: Yesterday I was kicking off a two-day National Nutrient Assessment Workshop that EPA is sponsoring. We have convened 22 experts from EPA, 17 academic experts, 10 state officials with particular expertise in nutrient management, 7 people from the consulting community, and 3 experts from local and interjurisdictional governments to help formulate a better tool box for addressing nutrient problems nationally. Last month I addressed the Inter-governmental Conference to Adopt a Global Program of Action for the Protection of the Marine Environment from Land-Based Activities. More than a hundred countries participated in this meeting which grew out of the UNEP-Rio Conference in which there was an international commitment to better address marine resources and the impacts to them from land-based sources.

## EPA Funding Will Affect Our Ability to Address Hypoxia

At the same time, however, our ability to deal with this and other environmental problems is closely related to the availability of resources with which to work. The President has stated that he will veto the Appropriations bill for EPA because the Senate and House have cut funding below the Administration's request and below the FY 1995 level. This is the first trip I've made by airplane paid for by EPA since the beginning of the fiscal year on October 1. I'm also gratified to say that the Section 319 Program to address run-off has been fully funded by both the House and the Senate at the \$100 million level the Administration requested.

## The Problem and Its Causes

First let me talk about the problem and its apparent causes: Hypoxia and other effects of nutrient over-enrichment are not just limited to the Gulf of Mexico, or even to our coastal waters. Nutrient over-enrichment is a pervasive problem which reduces the quality and productivity of the Nation's Waters. It has been the primary focus of efforts to restore the productivity of the Chesapeake Bay. There has been a dead zone for

many years in Long Island Sound—not caused by toxic chemicals but by lack of oxygen.

My first illustration (Figure 3) shows that indeed nutrients are a problem upstream in the Mississippi-Missouri Watershed as well as downstream in the Gulf of Mexico. The states shown in green are those states that, in their 1994 Water Quality Assessment Reports to EPA, identified nutrient enrichment as the primary cause of water quality impairment in their waters. River and streams have a natural flushing action which often makes the effects of nutrient enrichment less apparent and does, in fact, transport the nitrogen and phosphorus in fertilizers, animal waste, and domestic sewage to downstream areas, either lakes or estuaries, where there is limited or no flushing action for it to sink. Cross-hatched states are states which identify nutrient enrichment as the primary cause of impairments for their lakes and reservoirs.

Thus, control of nutrients in the upper watershed of the Mississippi and Missouri Basins will potentially benefit not only the Gulf of Mexico and downstream states, but also have at-home benefits for many of those states further up in the watershed. Although states shown here in blue did not list nutrient enrichment as a primary cause of impairment, it may be a primary cause in some waters or a secondary cause in many waters. In the aggregate, nutrients are the leading source of water quality impairment in the United States.

### Sources and Distribution of Nutrient Discharges

Let me turn to the amounts and distribution of the activities that contribute to nutrient loadings.

There are about 11.5 million tons of nitrogen fertilizer currently applied to croplands, 6.5 million tons of manure generated by 11 billion farm animals, 3.2 million tons of nitrogen entering our waterways as a result of atmospheric emissions. About .8 million tons are discharged from public owned wastewater treatment works.

Figure 4 depicts potash fertilizer use in tons per square mile, on a county-wide basis. The heaviest use rates are shown as yellows and reds. (The greatest number of these is in the upper Mississippi basin.) Information on the prevalence of livestock which, of course, correlates with manure, shows a highly similar picture (Figure 5). Figure 6 shows nitrogen fertilizer use in 1991 on a county basis.

### Nutrient Reduction Experience

EPA and partner states have substantial experience in developing strategies to address nutrient over enrichment in coastal areas. Of the 28 estuaries enrolled in the National Estuary Program, Galveston Bay, Tampa Bay, Sarasota Bay, Corpus Christi, and Barataria-Terrebonne are all on the Gulf Coast. All of those estuaries, and in fact all of the estuaries in the National Estuary Program, identify nutrient enrichment as a primary environmental problem that they want to deal with.

Of course, the consequences of hypoxia aren't generally public health problem, rallying public concern and public interest, is more of a challenge than if we were confronting a drinking water contaminant or a toxic cloud. Ground water contamination by elevated levels of nitrate is a public health concern in some instances, however.

For the most part, we are talking about both an economic problem—lost economic returns in terms of fisheries productivity and catch, and aesthetic problems in terms of lakes, estuaries, and other water bodies which are unable to fully support recreation due to algae blooms and other problems.

While the relative contribution from point sources and run-off varies from watershed to watershed, nationally, only about 6 percent of the nitrogen loadings come from point-source discharges. It is generally possible to remove a pound of nitrogen from non-point sources in a far more cost effective manner than is true for removing that same pound of nitrogen from a point source.

### Cost-Effective and Cost-Saving Run-off Control Measures

I think some of the most encouraging news I can share with you is that there are simple, practical and affordable control measures for reducing nutrient run-off from non-point sources. A number of these take the form of prevention approaches, meaning that the environmental benefit is realized by reducing use of the potential pollutant, in this case fertilizer, without reducing the benefit to food production or the producer. I'm sure John Burt will talk in a few moments and perhaps later in the Conference about some of the progress being made in agronomic practices. Just a few factoids I've collected are:

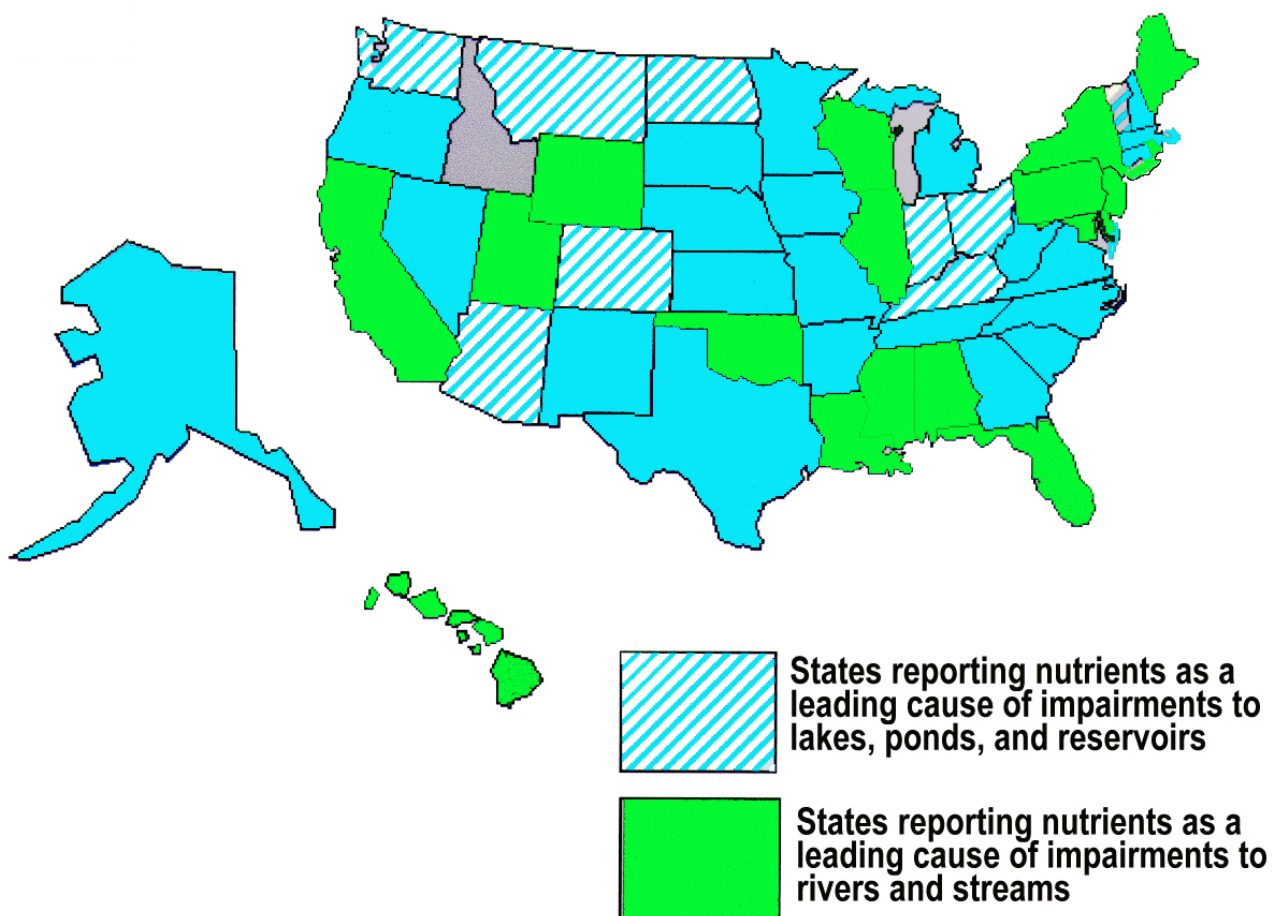


Figure 3.

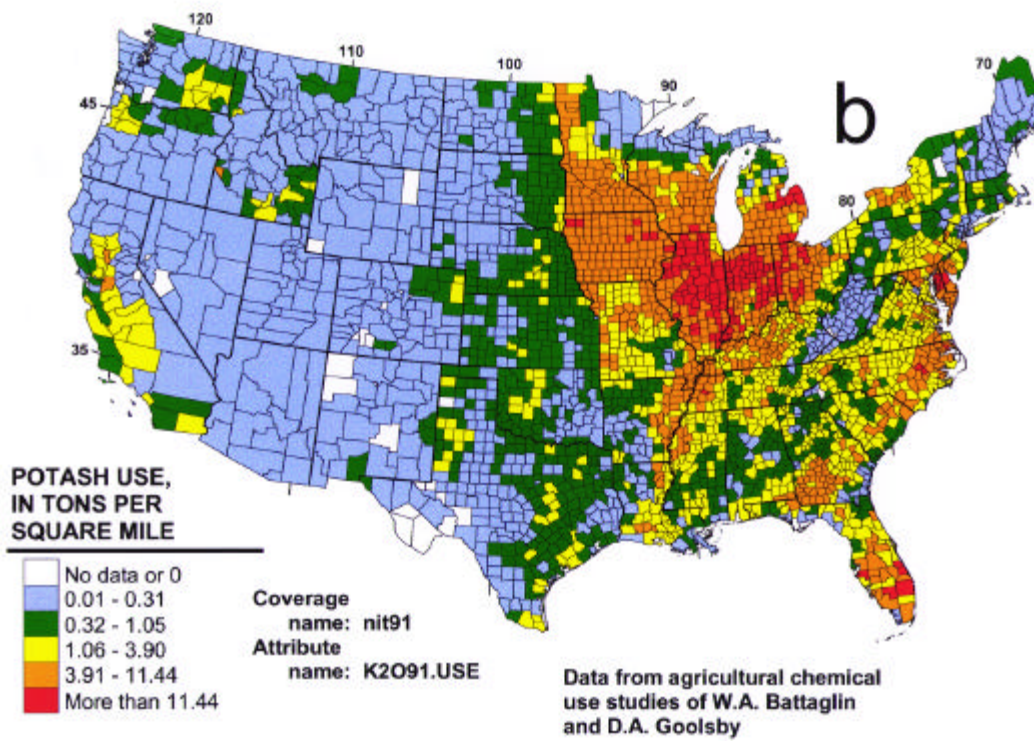


Figure 4.

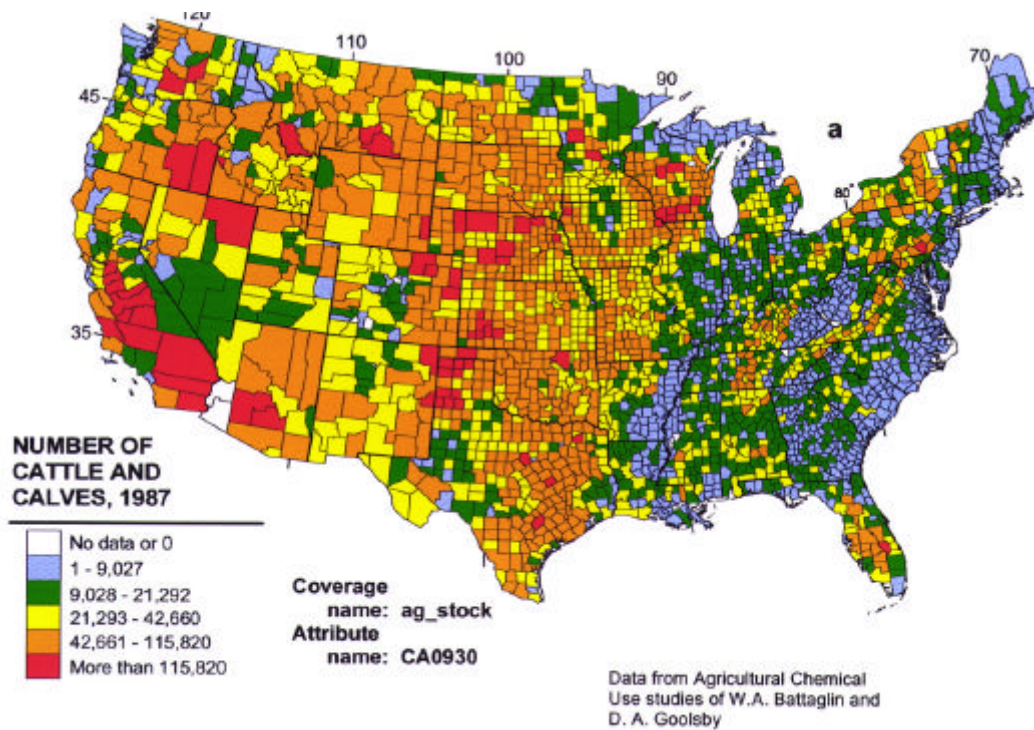


Figure 5.

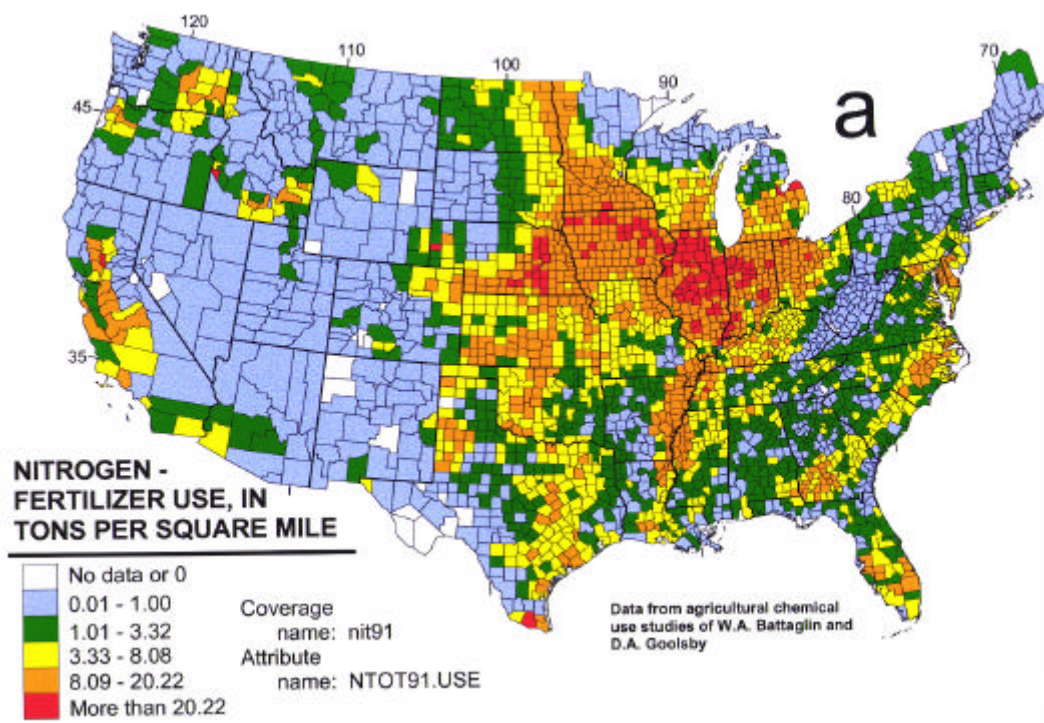


Figure 6.

In the Big Spring Basin Demonstration Project where they've been working with new farming techniques since 1981, farmers have reduced their nitrogen fertilizer use by 34 percent from about 115 lbs/acre in 1993 compared to 174 lbs/acre in 1981, realizing a cost savings of \$360,000 or about \$1800 per producer with overall improvements in yield.

Participating farmers in Maryland's state-wide nutrient management program have achieved an average reduction of 35 lbs. of nitrogen per acre and 41 lbs of phosphates per acre; in Nebraska, nitrogen applications to corn have been reduced by 30 lbs./acre with no decrease in yield and at a cost savings of about \$900,000 annually for participating farmers.

Of course, there are other controls, as opposed to

prevention methods, like the use of buffer strips to physically and biologically intercept run-off. There are also *mitigation* strategies, like the restoration of wetlands, which can sequester some of the nutrients, before they reach lakes or estuaries or the Gulf. The work we are doing nationally to demonstrate and evaluate a variety of control methods or prevention methods and their cost-effectiveness will be highly beneficial to the work that's undertaken to address problems in the Gulf. Strategies to reduce nutrient loadings to the Gulf are also likely to return significant water quality improvements and benefits for those who live in upstream states.

### A National Context for Addressing Gulf Hypoxia

I want to quickly mention a couple of national

trends that I think are going to affect the nutrient management picture and therefore, affect what's taking place with this Conference and its follow-up work. The first is the changing paradigm for addressing water quality problems in the nation. We're increasingly moving, along with states and our federal colleagues, away from a source-by-source or a pollutant-by-pollutant approach to a whole watershed approach Don Boesch illustrated in his discussion of the Chesapeake Bay experience. I think the Bay experience, along with our experience in the Clean Lakes Program and National Estuary Program, demonstrates that watershed management is the approach we need to use to engage the stakeholders who can be a part of the problem and can become a part of the solution. The Clean Water Act re-authorization debate has been underway for some time now. I don't think we're expecting significant changes in federal law in this Congress. Notwithstanding that, we've moved forward with the states to realign programs on a watershed basis.

Louisiana has been a participant in a related effort of redesigning and revitalizing the National Non-Point Source Program. I alluded earlier to the fact that EPA's Clean Water Act Section 319 grants program is fully funded at the level requested by the Agency and equal to last year's level. We're also very close to articulating a new policy for pollution trading. This market-oriented mechanism will encourage point sources to meet their pollution reduction requirements by financing or undertaking non-point source

control practices which may save them significant resources.

All of the Gulf states, along with 20 or so other states, have prepared and submitted to EPA, coastal non-point source control programs developed as a result of legislation enacted in 1990. We're expecting to see some significant water quality improvements as a result of these programs. We are evaluating the State programs now to determine which can be approved, which would be conditionally approved, and which disapproved.

I look forward to the expert presentations which have been arranged for the balance of this Conference and outlining, at the conclusion, some thoughts on how we proceed from here.

## ***Presentation Discussion***

**Robert Wayland** (*U.S. EPA, Washington, D.C.*)

**Don Boesch** (*University of Maryland, Cambridge, MD*) commented that to gain local support, it is imperative to communicate the local water quality benefits as a result of solving the nonpoint problem instead of solely focusing on the benefit to the hypoxia area. For example, Pennsylvania began participating in the Chesapeake Bay Program because it benefitted their local water quality.